Claims

1. A pressure electrolyser having a pressure reservoir (12; 32) and an electrolytic cell block (13; 33) containing a number of electrolytic cells (14; 34) and positioned in the pressure reservoir (12; 32), the electrolytic cells (14; 34) each containing anodes and cathodes and an electrolyte circulatory system for supplying electrolyte to the anodes and cathodes being provided, having an oxygen separator (21; 41) to separate the gaseous oxygen formed during the operation of the pressure electrolyser and a hydrogen separator (22; 42) to separate the gaseous hydrogen formed during the operation of the pressure electrolyser and having a store of an inert gas, in particular nitrogen, to inert the pressure electrolyser (11; 33) when it is switched off,

c h a r a c t e r i s e d i n t h a t

the store of inert gas can be supplied to the oxygen separator (21; 41), and the electrolyte circulatory system contains a connecting line (23a; 23b; 43a; 43b) via which a part of the electrolyte can be pushed out of the hydrogen separator (22; 42) when the inert gas is applied to the oxygen separator (21; 41), thereby displacing the gaseous hydrogen.

2. A pressure electrolyser in accordance with claim 1,

c h a r a c t e r i s e d i n t h a t

the oxygen separator (21) and/or the hydrogen separator (22) is provided outside the pressure reservoir (12) and when the inert gas is applied to the oxygen separator (21) a part of the electrolyte can be pushed by the pressure reservoir (12) and/or by the oxygen separator (21) into the hydrogen separator (22) in order to displace the hydrogen in the hydrogen separator (22).

3. A pressure electrolyser in accordance with claim 1,

c h a r a c t e r i s e d i n t h a t

the oxygen separator (41) and/or the hydrogen separator (42) is formed by a part of the volume inside the pressure reservoir (32), and when the inert gas is applied to the oxygen separator (41), a part of the electrolyte can be pushed into the part of the pressure reservoir volume forming the hydrogen separator (42) in order to displace the hydrogen.

4. A pressure electrolyser in accordance with claim 1, 2 or 3,

characterised in that

the connecting line (23a; 23b; 43a) via which a part of the electrolyte can be pushed out of the hydrogen separator (22; 42), thereby displacing the hydrogen, is provided outside the pressure reservoir (12; 32).

5. A pressure electrolyser in accordance with claim 4 in conjunction with claim 2,

characterised in that

the connecting line (23b) is formed by a shuttle line (23b) which runs beneath the liquid level of the electrolyte and connects the oxygen separator (21) to the hydrogen separator (22).

6. A pressure electrolyser in accordance with claim 1, 2 or 3,

characterised in that

the connecting line (43b) via which a part of the electrolyte can be pushed out of the hydrogen separator (42), thereby displacing the hydrogen, is provided inside the pressure reservoir (32).

7. A pressure electrolyser in accordance with one of claims 1 to 6,

characterised in that

the housing (35) of the electrolytic cell block (33) together with the pressure reservoir (32) form at least two separate chambers (37, 38) which are part of the electrolyte circulatory system and which are delimited from the electrolytic cells (34) by the housing (35) and from the environment by the pressure reservoir (32), one of the separate chambers (37) being part of an anolyte circuit and connected to the oxygen separator (41) and another of the separate chambers (38) being part of a catholyte circuit and connected to the hydrogen separator (42).

8. A pressure electrolyser in accordance with claim 7,

characterised in that

the separate chambers (37, 38) are separated from one another by dividing walls (39, 40) which extend between the housing (35) of the electrolytic cell block (33) and the pressure reservoir (32), and the connecting line (43b) via which a part of the electrolyte can be pushed out of the hydrogen separator (42), thereby displacing the hydrogen, is formed by a passage in an area of the dividing walls (39, 40) beneath the liquid level of the electrolyte.

9. A process for switching off a pressure electrolyser which comprises a pressure reservoir (12; 32) and an electrolytic cell block (13; 33) containing a number of electrolytic cells (14; 34) and positioned in the pressure reservoir (12; 32), the electrolytic cells (14; 34) each containing anodes and cathodes and an electrolyte circulatory system for supplying electrolyte to the anodes and cathodes, an oxygen separator (21; 41) to separate the gaseous oxygen formed during the operation of the pressure electrolyser (11; 31) and a hydrogen separator (22; 42) to separate the gaseous hydrogen formed during the operation of the pressure electrolyser (11; 31) being provided, an inert gas, in particular nitrogen, being fed to the pressure electrolyser (11; 31) to inert it when it is switched off,

c h a r a c t e r i s e d i n t h a t

the inert gas is fed to the oxygen separator (21; 41), and when the inert gas is applied to the oxygen separator (21; 41) a part of the electrolyte is pushed out of the hydrogen separator (22; 42) via a connecting line contained in the electrolyte circulatory system (23a; 23b; 43a; 43b), thereby displacing the gaseous hydrogen.

10. A process in accordance with claim 9,

c h a r a c t e r i s e d i n t h a t

the oxygen separator (21) and/or the hydrogen separator (22) is provided outside the pressure reservoir (12), and when the inert gas is applied to the oxygen separator (21), a part of the electrolyte is pushed by the pressure reservoir (12) and/or the oxygen separator (21) into the hydrogen separator (22) in order to displace the hydrogen in the hydrogen separator (22).

11. A process in accordance with claim 9,

c h a r a c t e r i s e d i n t h a t

the oxygen separator (41) and/or the hydrogen separator (42) is formed by a part of the volume inside the pressure reservoir (32) and when the inert gas is applied to the oxygen separator (41), a part of the electrolyte is pushed into the pressure reservoir volume forming the hydrogen separator (22) in order to displace the hydrogen.